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ABSTRACT

Noting that prevention programs seldom work well, primarily because they are not implemented as required by the underlying program theory, this article summarizes literature suggesting that features of the implementing organization and its ecological context are related to the strength and fidelity of implementation. Schools are used as a focal point for studying the organizational correlates of implementation strength, and evidence is summarized concerning the demographic and geographic location of schools possessing characteristics likely to hinder implementation. The article demonstrates how these factors may undermine a potentially strong prevention program, using as an example an urban school-based prevention program. The school is described, including the history of the implementation, outcomes, and reasons for failure. The reasons for failure are particularly highlighted, and include problems with: (1) training and technical assistance; (2) outsiders; (3) leadership; and (4) organizational capacity. The article concludes by noting that high-quality programs are planned, coordinated, and ongoing; include multiple interventions; rely on behavioral science technology; and integrate education, skills development, and motivation on a range of health problems and issues. The following recommendations are offered: identification of meaningful measures of quality school health education programs, acquiring information about causal factors that determine level of implementation, formulating theory to strengthen intervention practices, valid assessment instruments, and appropriate staff training. Contains approximately 75 references. (SD)

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• CHAPTER 8 •

Making Prevention Work

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Prevention programs seldom work well, primarily because they are not implemented as required by the underlying program theory. This is not a new finding. Twenty years ago, an extensive review of delinquency prevention and treatment programs (Wright & Dixon, 1977) concluded that little evidence of positive effects for prevention programs could be found in the available research, but that implementation quality and quantity helped to explain the success of the relatively few programs that produced positive results. More recently, Lipsey (1992) conducted a meta-analysis of 443 juvenile delinquency prevention and treatment programs to examine the relation of program characteristics, subject characteristics, researcher characteristics, and evaluation design to program effects. Lipsey found that effects overall were small, but his most important finding was that the "dosage" of treatment program and features of the treatment program itself

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were associated with the size of the effects. More structured, behavioral, and multimodal treatments were more effective. Lipsey's dosage is equivalent to strength of implementation and his findings about implementer characteristics implicates fidelity of implementation. Researcher implementers (who tended to produce more effective programs) presumably hewed closer to the program plan.

Weak program implementation is likely to hinder progress toward the national health improvement goals established in *Healthy People 2000* (U.S. Department of Health and Human Services, Public Health Service [DHHS], 1991). This document calls for widespread dissemination of theory-based, empirically tested innovations to enhance health and reduce risk in children and youth. Policymakers, practitioners, and researchers must recognize that the national dissemination of well-conceptualized, validated programs to settings where they are implemented poorly is unlikely to achieve the ambitious goals expressed in *Healthy People 2000*. In fact, the lack of progress noted by the midcourse reviews (DHHS, 1995; Fleming, 1996) may be attributed in part to the low quality of program implementation.

In this chapter, we summarize literature suggesting that features of the implementing organization and its ecological context are related to the strength and fidelity of implementation. We use schools as a focal point for studying the organizational correlates of implementation strength and summarize evidence about the demographic and geographic location of schools possessing characteristics likely to hinder implementation. We demonstrate how these factors may undermine a potentially strong prevention program using as an example an urban school-based prevention program.

Organizational Factors Related to Level of Implementation

Much of the research on implementation of educational innovations occurred in a flurry of evaluative activity in the late 1970s and early 1980s culminating in an influential report, *A Nation at Risk* (National Commission on Excellence in Education, 1983), which painted a sorry portrait of American education. In general,

the research indicated that implementation varies across the country and between individual schools (Berman & McLaughlin, 1978; Liberman & Miller, 1984; McLaughlin, 1990) and that this variance affects outcomes (Loucks, 1975; Stallings, 1985).

Several factors involving program implementation influence program outcomes. Information regarding these factors can be gleaned from quantitative evaluations of school improvement efforts as well as more qualitative research involving interviews and case studies. Several authoritative reviews of implementation shape our discussion (Clark, Lotto, & McCarthy, 1980; Fullan, Miles, & Taylor, 1980; Fullan & Pomfret, 1977; Purkey & Smith, 1983). These reviews have related characteristics of the innovation and of the organization to the strength and integrity of program implementation.

Characteristics of the Innovation

In their review of implementation of curriculum innovations, Fullan and Pomfret (1977) found that successfully implemented curricula were explicit and not confusing to teachers (see also Kennedy, 1978). In addition, Fullan et al. (1980) found implementation of change regarded as "practical" to teachers greater than implementation of change that affected the classroom only indirectly.

Implementation seems to vary with program complexity. In an analysis of 12 case studies, Huberman and Miles (1984) found that the scope of the program predicted the magnitude of change. Projects in the 12 schools tended to be downsized and adapted, resulting in greater change in projects that began more broadly based. The precise point at which programs have sufficient breadth (Berman & McLaughlin, 1978; McLaughlin, 1990; Miles, 1986) and depth (Clark et al., 1980) remains unclear, however. This tendency to narrow the scope of broader-based programs will conflict with the expected trend toward broader, multifaceted programs recommended in recent reviews of effective prevention practices (Elias et al., 1994; Stoil, Hill, & Brounstein, 1994; Tobler, 1986) and with the *Healthy People 2000* objective to increase comprehensive health education programs.

A key to implementing multifaceted innovation may be effective staff training. One study (Wyant, 1974) quantified the length of

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effective training related to implementation as measured by communication variables on teacher questionnaires. Wyant and colleagues found that training had consistent positive effects on communication, but only after 22 hours of staff involvement. Small amounts of training served to open up communication, but did not allow enough time to progress toward dealing with problems. One of the clearest findings in organizational psychology is that high-ability workers require less training time than less able workers—and they perform better on complex jobs. It comes as no surprise, therefore, that research on effective program implementation in education has found that higher-ability teachers learn to implement programs according to plan more than do lower-ability teachers (Good & Brophy, 1987).

A large-scale evaluation of school health education programs (Connell, Turner, & Mason, 1985) also found evidence that the quality of implementation increased with the amount of staff training. Teachers who received no in-service training were compared with teachers who received full and partial in-service training on measures of the percentage of the program taught and program fidelity. On the average, fully trained teachers delivered a larger percentage of the program with greater fidelity than teachers with partial training, who in turn implemented the programs more fully than teachers with no training. But because the amount of training received was not a manipulated variable, its effects on the level of program implementation may be confounded with the effects of other teacher qualities related to the amount of training received. Also, the study found that even with no training, 70% of the lessons were delivered with 60% fidelity to the program.

Teacher participation in the process of change, training, and planning appears to affect implementation (Berman & McLaughlin, 1978; Liberman & Miller, 1981, 1984; Loucks, 1983; Social Action Research Center, 1979). Berman and McLaughlin (1978) identify teachers as key to the "mutual adaptation" that occurs with successful implementation of innovations in their 4-year, two-phase study of 293 federally funded programs in 18 states. Teachers play an important role in "local input" into planning and can act as "internal change agents" necessary for implementation (Fullan et al., 1980).

At the same time, mere participation is unlikely to be useful or necessary. Research by industrial organizational psychologists

(Jackson, 1983) implies that providing opportunities for worker participation can increase workers' sense of involvement but produce little else. Teacher participation will be useful when they can provide needed information about practical obstacles or potential opportunities for improvement, or when their consent or commitment is needed for a project that they could otherwise sabotage (see Vroom & Yetton, 1975).

Characteristics of the Organization

Characteristics of school personnel and school climate also predict strength and integrity of implementation. Berman and McLaughlin (1978) found that several teacher characteristics affected implementation of innovations in their study of federally funded programs. A questionnaire given to superintendents, program managers and directors, principals, and teachers—supplemented by follow-up site visits—showed that teachers' sense of their own efficacy affects how they carry out changes in their classrooms. Several other studies imply that teacher morale is related to teacher support of innovative projects (Fullan & Pomfret, 1977; Social Action Research Center, 1979). Runkel and Bell (1976) found that teachers' skill at communicating during emotional periods predicted their readiness for collaborative action. Miles (1986) found teachers' skill deficits to be a barrier to change in five extensive case studies of urban high schools. Huberman and Miles (1984) surveyed students and teachers and found that mastery of innovation that occurred over time reinforced implementation of change in programs. Even difficult changes could be mastered with sufficient administrative assistance, which in turn would lead to teacher commitment to the process.

School climate or culture also predict strength and integrity of implementation. Each school's culture is shaped by its community, its central office, its staff and students, and its physical structure. A cultural perspective on schoolwide change (Rossman, Corbett, & Firestone, 1988) views the nature of change at the school level in terms of "sacred" and "profane" norms. Change aimed at changing sacred norms will encounter resistance from the forces that make up the school. Behavior may change, but the norms may remain. Notwithstanding cultural forces, technical elements of change have been identified on which implementation varies between schools.

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One of the most consistent findings points to leadership as crucial to implementation of educational change. Fullan et al. (1980) found leadership by school principals a factor in all three phases of implementation: entry, start-up, and maintenance. Berman and McLaughlin (1978) found that principals gave the innovations local legitimacy and acted as gatekeepers. Hall and colleagues (Hall, 1987; Hall, Hord, Huling, Rutherford, & Stiegelbauer, 1983; Hall, Rutherford, Hord, & Huling, 1984) identified three styles of principals and correlated them with degree of implementation. Principals high in initiating style—those who accommodate and become involved in the change process—achieved higher levels of implementation than did the "Responders"—principals who stay behind the scenes and show interest in change only for the short term—or the "Managers"—principals who carry out change when dictated, but do not initiate or add local input.

Leadership is not limited to the principal. Several studies found central office support crucial to implementation (Fullan et al., 1980; Fullan & Pomfret, 1977; Huberman, 1983). Others found teams of central support necessary for change (Louis, 1986; Purkey & Smith, 1983). One study of teams of innovators found that teams accomplished more effective implementation of programs when administrators or principals were members of the planning team.

Another type of support identified with innovation can be generally termed *resources*. Concentrating on urban high schools, Louis (1986) surveyed 248 principals in schools involved in successful effective schools programs for at least 1 year and found that lack of resources, time, and money were most often listed as barriers to implementation. Reviews of research also identified resources, physical and monetary, as limiting to implementation (Fullan et al., 1980; Fullan & Pomfret, 1977). Other evidence implies that resources do not play an important role in the variation of implementation (Berman & McLaughlin, 1978; Clark et al., 1980; McLaughlin, 1990), or that resources affect implementation indirectly through financial support for training (Fullan & Pomfret, 1977; Miles, 1986). Whether resources are externally or locally provided may also affect the implementation and probably has more effect on how innovation is maintained (Holmes, Gottfredson, & Miller, 1992).

Organizational capacity and school climate also affect how implementation occurs. Problem-solving focus, staff morale, perceptions of support, and readiness for change relate to level of organizational development (Derr, 1976; Fullan et al., 1980; Purkey & Smith, 1983). Stability of staff, especially principals, was another element of school climate cited by teachers (Huberman, 1983), in case studies (Mann, 1978), and by studies compiled for review (Purkey & Smith, 1983). Overall, school environments that do not feel "turbulent" or overwhelmed with basic problems have a better chance of implementing "extra" programs. Clinical experience implies that schools with low morale or an impaired infrastructure are difficult places to put innovation in place (Gottfredson, 1984b; Gottfredson & Gottfredson, 1987).

One author (Miles, 1986) noted in his case studies of urban high schools that "improvement happens to those who seek it" (p. 8). Fullan et al. (1980) noted that schools had less implementation when they had a record of previous failures in innovation. Runkel and Bell (1976) surveyed 12 elementary school staffs about the innovations recently attempted and categorized them into five types varying in difficulty of implementation from innovations that barely affect teachers to basic structural changes. The research indicated that teachers perceived their schools as attempting flurries of innovation in descending order of difficulty. Schools failing at one innovation may not try a more difficult change, but may attempt a simpler one.

Local adaptation may be crucial to implementation (Berman & McLaughlin, 1978; Huberman & Miles, 1984; McLaughlin, 1990). Schools with the necessary readiness for innovation seem to be able to adapt an innovation to the local culture, thereby increasing the level of program implementation. Adaptation is a double-edged sword, however. If local adaptation omits key features of an innovation (as often happens) a limited or ineffective adaptation may be all that is put in place.

To summarize, a greater degree of implementation integrity can be expected with explicit, user-friendly innovations for which a great deal of training is offered and when teachers have participated in the planning for the innovation. Greater integrity can be expected in schools that have highly skilled teachers with a high sense of self-efficacy, cultural norms that do not reject the innovation, strong district- and school-level leadership, staff stability, central office support, and a climate supporting change (e.g., problem-solving focus, high staff morale and commitment to change, no

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history of failed implementation, and a relatively low level of turbulence). Schools seriously deficient in one or more of these features are not yet ready to accept major innovation.

Troubled Schools Less Capable of Innovation

The distribution of implementation quality across different areas and types of school is not well understood. What little evidence exists points to unequal distribution, with the schools in the most troubled, urban areas having the least capacity for innovation. Gottfredson and Hybl (1989) asked principals in schools in suburban, rural, and urban areas to describe their jobs. Urban and rural principals significantly more than suburban principals responded that dealing with issues of student interaction and social control (e.g. attendance, discipline) is important to their job. With fewer student problems to attend to, suburban principals are allowed more time for planning and action and keeping up to date, both areas that would encourage implementation of change. A survey completed by teachers in all schools in a diverse school district (Gottfredson & Gottfredson, 1989) showed that teachers' perceptions of smooth administration in the school varied with a measure of average student economic status in the expected direction although not significantly in the small sample: Teachers in schools having a larger percentage of students receiving free or reduced lunch saw more problems with the school administration. A large qualitative study of urban high school principals explained some of the difficulties in leadership for innovation as a mismatch of expectations for managing change and the skills of building principals. Beleaguered principals faced expectations for dealing with improving instructional and behavioral outcomes for students, without having enough authority to effect change—and expectations for handling complex reforms, without necessary supervisory or instructional leadership skills (Louis & Miles, 1990).

In addition to a burdened principal, another barrier to change in the urban school may be pervasive school climate problems. The case study of the dangerous and depressing urban high school is a media phenomenon, but one that is supported by research. Teacher morale and orderliness are lower for urban than suburban schools

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(Gottfredson & Gottfredson, 1989). A large study of the effectiveness of teams involved in innovations in 89 schools (of which 48% were in large cities and 67% were high schools) found several climate differences by location on questionnaires given to students, teachers, and principals (Social Action Research Center, 1979). It found a relationship between location of school and school crime and disruption. In neighborhoods described by respondents as deteriorated and having problems with drugs, youth gangs, and crime, there was a significantly higher perception of danger. Large city schools had a significantly higher student-to-teacher ratio and a greater security orientation than did suburban schools. These factors affected implementation. A study of working conditions in schools in two large cities found teachers stressed by problems of security, governance, control, and participation (Ginsberg, Schwartz, Olson, & Bennett, 1987).

Implementation is affected by resource availability. In some cases, new programs may have adequate funding, but previous budget cuts may have hurt teachers' ability to provide supplies and curricula. Gottfredson and Gottfredson (1989) found that teachers' perceptions of the resources available for teaching and learning varied with the percentage of students receiving free lunch and the percentage Black students in the school, evidence that those who have the highest need have the least available to them.

Researchers allude to, but have not studied systematically, differences in teacher skills by urban and suburban locations. Teacher skills and mastery of new techniques and technologies facilitate change both directly by increasing the likelihood of strong implementation of a particular technology and indirectly by producing a history of successful innovation in the school, which fuels morale and commitment to future attempts. Perhaps like some urban principals, teachers in urban schools are overburdened and underskilled, at least when faced with innovations. Two studies provide indirect evidence for this. Weiner (1990) studied eight teachers in training and found prospective city teachers discouraged by their student teaching experiences, more so than those who chose to teach in suburban schools. The author concluded that the difficulty in attracting talented young teachers to urban schools requires specialized preparation. A study in Milwaukee looked at why teachers leave urban schools (Haberman & Rickards, 1990).

Most of the 50 teachers surveyed left for "other employment," "the residence requirement," or "personal reasons" but still choose to teach. Lack of discipline and inadequate support from administration were the two top reasons cited, not diverse or underachieving students as the teachers anticipated before they began teaching. Comparative studies would clearly address the issue of teacher ability, but some evidence exists that urban schools may not attract or keep the skilled teachers needed.

The foregoing discussion implies that school characteristics are related to the level of implementation and that some of these school characteristics vary by urban/suburban location of the school. Only one study provides direct evidence that differences in teacher skills, resources, leadership, and environment explain urban/suburban differences in the level of implementation. The Social Action Research Center (1979) quantified the level of implementation of programs initiated by school teams. It found that implementation strength was significantly related to school location ($r = .42$). Large urban schools in poor, crime-ridden neighborhoods also implemented different types of programs. The urban schools, when given a choice about what to implement, concentrated their efforts on discipline, security, and traditional options. Teams in these schools also chose interventions aimed at improving teacher morale rather than more technological and sophisticated innovations. Urban schools planned differently with more administrative participation and equal minority composition on planning teams. The researchers noted that participation in planning decreased teachers' sense of alienation.

Although more definitive research is needed to better understand the distribution of implementation strength and fidelity implementation across different types of schools, it appears that it is precisely those schools whose populations are most in need of prevention and intervention services that are least able to provide those services. The studies summarized above found that leadership, teacher morale, teacher mastery, school climate, and resources are different on average in urban and other schools.

The following section uses a school-based, multicomponent prevention model operating in one troubled urban middle school to illustrate how several of the organizational factors discussed here interfere with the implementation of a potentially powerful prevention effort.

Case Study of a School Not Ready to Support Change

In the late 1980s, the Gottfredsons (Gottfredson & Gottfredson, 1990) worked with a team of district-level administrators and school-level staff (appointed by the superintendent) in a Southern school district to develop a long-range and comprehensive plan to increase districtwide graduation rates by the year 2001. One of several objectives of the district plan was to reduce counterproductive student behaviors—including drug and alcohol use, delinquent behavior, pregnancy, nonattendance, and misconduct in school—that were seen as precursors of school dropout. The goals and objectives established in the plan mirrored several of the national health improvement goals in *Healthy People 2000*. One *Healthy People* risk reduction objective is to increase the high school graduation rate to at least 90%. Others include reducing physical fighting and weapon carrying, substance use, and pregnancy among adolescents. A subcommittee of the reform task force (consisting of school system administrators, teachers, and the Gottfredsons) supported the development of an application to the Office for Substance Abuse Prevention (later renamed the Center for Substance Abuse Prevention, or CSAP) to demonstrate a substance abuse prevention program in one of the school system's middle schools.

The subcommittee used parts of the program development and evaluation (PDE; Gottfredson, 1984b; Gottfredson, Rickert, Gottfredson, & Advani, 1984) method to develop the proposal for the project. The problems to be addressed in the program were elaborated. A theory about the sources of the problems was articulated, and program components that most directly target the theoretical variables implied by the theory were located. According to the program theory, three intermediate mechanisms—increasing social bonding, increasing social competency skills, and increasing school success—would result in a reduction in problem behaviors, including the use of alcohol, tobacco, and other drugs. This model is supported by an impressive body of research and theory linking each of the intermediate outcomes to problem behavior (see Gottfredson, Gottfredson, & Skroban, 1996, for a summary).

This research-based rationale for preventive intervention was accepted by the district-level educators, and ideas about specific intervention components consistent with the theoretical model

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were sought. Intervention components that had been demonstrated in prior research to alter the targeted intermediate or ultimate outcomes were preferred. A proposal to implement and test the set of intervention strategies in the context of a schoolwide program was submitted to CSAP.

During the year following the development of the application to CSAP, the assistant principal who had been active on the committee that developed the proposal left the school to become the principal of another school. The superintendent who supported the development of the district-level plan was pressured by the school board to leave town shortly after the proposal was written, and the assistant superintendent for curriculum and instruction who had spearheaded the district reform resigned shortly after it was funded. These events were followed by the demise of the district-level task force. The program was funded for a 5-year period by CSAP after key district leaders were lost.

Program Components

The initial set of intervention strategies, selected by a committee as described above, evolved over the course of the project to take account of local conditions and to strengthen implementation. For example, a community apprenticeship component was dropped when it proved too difficult to find positions for the high-risk youth. Also, several of the components initially delivered in study halls of other classes were combined into an "education and life focus" class into which all students were scheduled during the year. The following paragraphs describe the components that were eventually implemented with any degree of integrity in any year.

Instructional Improvement. Instructional improvement interventions included schoolwide changes in instruction as well as individually targeted tutoring. Cooperative learning (CL) techniques, which make use of small, heterogeneous learning teams to promote learning and school attachment, were to be used schoolwide. A substantial body of research at various grade levels and in numerous content areas has documented the effectiveness of CL for increasing academic achievement. Research has also demonstrated a positive effect of CL on attachment to school, self-esteem, and improved

relations among different types of students (Sharan, 1980; Slavin, 1980, 1983a, 1983b). The latter research suggests that CL methods may provide a mechanism for promoting friendships and positive interaction among high- and lower-risk individuals, which may reduce rejection of high-risk students by more prosocial students. Rejection of high-risk youth by their more prosocial peers is a precursor of alcohol, tobacco, and other drug use and other forms of delinquent behavior. According to the implementation plan, all reading teachers and half of the English, math, social studies, and science teachers were to use CL methods consistently in at least one class.

One-on-one tutoring was provided for by adult volunteers and students from local colleges. This instructional strategy has been shown to be effective for increasing academic performance (Glass & Smith, 1979), and some research has shown it to be effective for increasing social competency, as measured by reduced peer rejection (Coie & Krehbiel, 1984). This service was intended only for students identified as being at high risk. About half of the high-risk students were to receive regular tutoring throughout the school year.

Mentoring. A mentoring program was intended to provide prosocial adult models who were supportive and taught appropriate skills and behaviors to the young people. Although relatively little empirical evidence has yet been offered in support of the efficacy of these programs for reducing problem behavior, one recent study of a program that paired elderly mentors with high-risk sixth-grade students demonstrated positive effects of mentoring on attitudes toward school, school attendance, community service, knowledge about and attitudes toward elderly people, and a scale measuring reactions to situations involving drug use (LoSciuto, Rajala, Townsend, & Taylor, 1996). The mentoring program in our study paired high-risk students with teachers in the school who had volunteered as "academic godparents." Mentor-student relationships often involved tutoring, monitoring student progress, and sharing recreational activities. It was anticipated that 50 of these students would receive regular weekly mentoring each school year and that the mentoring contacts would be primarily on a one-on-one basis.

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Social Competency Promotion. Several additional components were aimed directly at social competency promotion. These components all focused on developing cognitive-behavioral skills and involved behavioral modeling and cognitive management techniques to help youth recognize potential problems, exercise self-restraint, assess consequences, and make and carry out plans to achieve desired outcomes. While most of the selected social competency modules emphasized social problem solving, two (career and educational decision skills and cognitive self-instruction) emphasized cognitive skills necessary for making good decisions about careers and enhancing academic performance.

Three social competency promotion modules were selected. The life skills training (LST; Botvin, 1989) program was implemented schoolwide. This component provided a 16-session LST course to all sixth graders. LST has been shown in a rigorous test (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990) to reduce smoking and marijuana use among White youth in Grades 7 to 9. Additional research (Botvin, Batson, et al., 1989; Botvin, Dusenbury, James-Ortiz, & Kerner, 1989) showed that the positive effects generalize to African American and Hispanic American populations. Because Botvin, Renick, and Baker (1983) suggested that the effects of the program are sustained better when booster lessons are delivered in successive years, an eight-session booster for all students in Grade 7 (beginning in 1992-93) and Grade 8 (beginning in 1993-94) was included.

This course was augmented with a 29-session social problem solving (SPS; Weissberg, Caplan, Bennetto, & Jackson, 1990) course for seventh graders. Studies of the efficacy of social competency promotion programs with middle school-aged youth have also demonstrated positive effects on problem-solving skills, prosocial attitudes, teacher ratings of impulse control and sociability, self-reported delinquent behavior, and intentions to use drugs and hard liquor (Caplan et al., 1992; Weissberg & Caplan, 1994; Weissberg, Jackson, & Shriver, 1993). This course was piloted with a few students during Spring 1992. It was initially targeted only at high-risk seventh graders, but was extended to all seventh graders at the beginning of the 1993-94 school year.

A 21-lesson violence prevention curriculum based on Guerra and Slaby's Viewpoints program was also added during the 1993-94

school year for all eighth-grade students. Viewpoints is a social skills training program that teaches youth the skills necessary to successfully resolve problem situations. It focuses on using social skills to avoid alcohol, tobacco, and other drug use; aggression and violence; and other problem behavior. Guerra and Slaby (1990) showed that a 12-session Viewpoints program increased skill in solving problems and identifying problem situations, and it reduced aggressive, impulsive behavior among a delinquent population. This program was adapted for middle school application.

Manning's (1991) model for teaching students skills to regulate their own learning was adapted for use with middle school-aged children. This model (cognitive self-instruction, or CSI) teaches students to define the problem they are supposed to be working on, focus their attention, guide themselves through the activity, cope with negative thoughts, and reinforce themselves for progress. Manning (1988) demonstrated that teaching elementary school-aged students these skills resulted in increased self-efficacy, more on-task behavior, and more positive teacher ratings of classroom behavior. The Manning model and materials were adapted for use with middle school students and implemented beginning in Fall 1993.

A career and educational decision skills (CED) program aimed at introducing careers and requirements for careers and teaching essential career-planning skills was developed initially for all eighth graders. A similar course was developed for all sixth graders for implementation in the third year of the program. The training included sessions on assessing vocational interests, values, understanding the educational requirements of different jobs, gathering occupational information, the pros and cons of career alternatives, developing an educational plan, selecting high school courses, job-seeking skills, and preparing résumés and applications. It is an experimental program developed for implementation in the South Carolina project.

The program taken as a whole corresponded closely to the "quality school health education" called for in *Healthy People 2000.* It was sequential, comprehensive, multimodal, theory driven, empirically tested, and targeted directly at enhancing health and reducing risk. And it was planned in conjunction with local educational leaders to increase local acceptance.

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The School

A middle school, Bradley,[1] was selected by district administrators as the site for the demonstration project. The school had worked previously with the researchers on a successful discipline management effort (Gottfredson, Gottfredson, & Hybl, 1993), and its assistant principal had been active on the district subcommittee and was extremely supportive of the project. Bradley had an enrollment of approximately 800 students and served a predominantly residential, lower-middle-class area. The catchment area for the school experienced a major demographic shift beginning in the late 1980s. Its student population began a gradual but steady shift in 1988 from a 50-50 Black-White split to majority Black. During the 1994-95 school year, Bradley's population was 75% Black. A similar shift was seen in the socioeconomic status of the student population during this time period. The percentage of students receiving free or reduced lunch increased from about 60% in 1990-91 to nearly 75% in 1994-95. The student population was exceptionally transient due to a nearby naval base—typically, between 20% and 30% of the students enrolled in a given year either enrolled after the start of the school year or left the school before the end of the year. Students also suffered educational disadvantage: 58% of Bradley's students in 1988-89 were overage for their grade, primarily due to skyrocketing grade retention rates that occurred districtwide after the school board imposed strict promotion standards in response to 1984 state educational reform legislation. Finally, in the 1988-89 school year, Bradley's suspension rate was 99 for every 100 students. The high suspension rate, evidence of unusual discipline problems in the school, was a large factor in Bradley's selection as the demonstration school.

History of Implementation

The program was designed as a schoolwide program. The entire staff was to be involved in the planning and implementation of the program. It was to be implemented in the context of the same organization development method (PDE) that guided the development of the proposal for the project. The method uses continual information feedback and technical assistance to the school staff as they attempt to implement the program. Typically, this method

involves the implementing organization in clarifying the rationale (or theory) underlying the program, selecting program components that most directly target the outcomes implied by the theory, setting explicit standards for the strength and fidelity of implementation, monitoring these standards and examining feedback on the quality of implementation, analyzing organizational obstacles to high-quality implementation, and identifying strategies to overcome these obstacles. In this actualization of PDE, the first two steps were accomplished at the district level as part of the task force activity described above. A team consisting of project staff paid by the grant (a counselor and teacher newly hired by the school to implement the program, and eventually three of the school's existing teachers who were directly involved with implementing one or more components) established implementation standards during off-site meetings, and feedback was generally provided only to the team of project personnel. Other school staff were informed of the program, its progress, and any expectations regarding their role in the project in faculty meetings, at one full-faculty in-service training session, at a few more intensive training sessions for specific program components, and by infrequent (two or three times per year) visits to the school by the researchers. The faculty had minimal involvement in planning and revising the program. Data feedback on program implementation was generally presented to the small team consisting of the researchers, the project counselor and teacher, and occasionally one or two other teachers heavily involved with the program. This smaller group was responsible for making programmatic decisions and sharing key information on program implementation with the rest of the school staff.

Gottfredson et al. (1996) summarize data on the number of persons receiving each component during each school year and the integrity of implementation of each component. The first school year, 1991-92, was largely a start-up year for the project. Only three components were attempted, and the level of implementation for each was very low. A small group of teachers was trained to use CL methods, and 13 actually used them. This core of teachers served as peer coaches to teachers trained in subsequent years. The CED course for eighth graders was implemented, but not all lessons were covered. Several teachers were trained to teach the LST course, and teachers taught a portion of the course in health classes. Nine classes received at least some of the course, but only four of these

were the intended sixth-grade classes. In short, during this first year the program was not well organized. Most components were not implemented at all, and those that were implemented were implemented inconsistently.

The program was stronger during the 1992-93 school year. CL was implemented by more than half of the teachers, but data on the intensity of the program indicated that it was implemented at less than half the intended strength (i.e., in fewer than half the number of classes intended) by those teachers. Most eighth-grade students received CFD at approximately half the intended strength, and students in Grades 6 and 7 received a nearly complete LST course (Grade 6) and booster (Grade 7). In addition, about one third of the high-risk youth received a small amount of tutoring (about five sessions during the year), a reasonable amount of mentoring (contact with a mentor two to three times per month during the school year), and the seventh-grade high-risk students received a reasonably well-implemented SPS skills course. This level of implementation was still well below what was inten ted. Students in Grade 8, for example, received no intervention aimed at social competency promotion.

A major change in the force field for implementation occurred in the 1993-94 school year. Persistent difficulties in scheduling students into study halls and other classes to receive the various components of the program led to a decision to incorporate all components except for the tutoring and mentoring into an education and life focus (ELF) course. The curriculum for each grade level was varied to include the appropriate components. Approximately one third of the students in the school were to be scheduled into the course during each of the three quarters, so that all students received it by the end of the year. Not all of the intended material was actually covered in each class, however. The CSI, Viewpoints, and Grade 6 CFD components were attempted for the first time as part of the ELF class. They reached 26% (Viewpoints), 37% (CSI), and 64% (CFD) of the intended populations. The level of integrity ranged from 60% of lessons completed for CFD to 96% for CSI. The LST course was implemented with a high degree of integrity, but only between 43% (Grade 7) and 69% (Grade 6) of the students in each grade level received the instruction. The SPS component reached almost three times more students as part of the ELF class than it had the previous year when it was implemented

through study halls, but its integrity slipped to about 50%. The CFD component for Grade 8 reached a smaller percentage of the eighth-grade population than it had the previous year, but with increased integrity. The high-risk tutoring component weakened from the previous year. This component proved extremely cumbersome to administer because it involved careful scheduling of individual students with individual tutors. The mentoring component reached more students during the 1993-94 school year than it had the previous year, and CL was also implemented more fully: 88% of the teachers used these techniques at about 63% of the expected intensity level. In summary, more components were added with the creation of the ELF class, but by the end of the third year, the program was still not being implemented with the expected strength and integrity.

The same program components were implemented during the 1994-95 school year, the final year. Several components—Viewpoints, SPS, LST for Grade 6, CFD for Grade 8, and tutoring—improved over the previous year in terms of the percentage of the population reached. The remaining sixth-grade components (CFD and CSI) were de-emphasized to concentrate on LST. The superior level of implementation for Viewpoints appears to have been at the expense of LST for eighth graders, which reached only 31% of the intended students. Generally, the integrity of the components declined in the last year. For example, the CFD Grade 8 component slipped from 70% of lessons completed in 1993-94 to 53% completed in 1994-95. The mentoring component remained approximately on par with the previous year, but the schoolwide CL intervention slipped back some. Eighty percent of teachers tried these strategies, but the percentage of intended classes in which the methods were used fell to 42%. The final year of the program was somewhat stronger than the previous year in terms of the number of students reached, but the large boost in implementation strength and integrity expected as the ELF class became routinized was not observed. It seemed to the researchers that program staff were attempting to narrow the program during this last year, perhaps in an attempt to make it more doable.

In summary, the program was never implemented according to the initial expectations of the team that had developed the proposal for the project. While most components of the program were delivered at some point in some way, the program was still in

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considerable flux by the end of the project period and it appeared to have reached its apex in terms of strength of implementation during the next to the last year.

Outcomes

Gottfredson et al. (1996) reported the results of the outcome evaluation for the project. The study examined change over the 5-year program period on measures of problem behavior and antisocial attitudes, positive school adjustment, and school attendance as a function of (a) membership in the treatment school (as opposed to a neighboring school used as a comparison school) and (b) participation in each of the program components within Bradley. The results showed that the prevention demonstration program, despite its grounding in social science theory and research, failed to reduce substance use, any other form of problem behavior, or any of the measured predictors of these problem behaviors.

Reasons for Failure

The experience described in the previous section is common in school-based prevention, and may be the rule in prevention efforts in troubled schools or school districts. In this section we reflect on the literature on school-based innovation and attempt to isolate the factors most likely responsible for the failure of our program. The following comments are based on observations made by the authors during our 15-year collaboration with the school district, interviews with key school system staff at the end of the project, and a climate survey administered to Bradley teachers before the project began (as part of the evaluation of an earlier project) and during the last month of the project.

Training and Technical Assistance. The review of literature on factors related to implementation quality suggested that effective staff training is a necessary ingredient. One study (Wyant, 1974) suggested that at least 22 hours of training were required to produce positive effects. Another (Connell et al., 1985) suggested that full training produced more and better program implementation than did partial or no training, although 70% of the program lessons were taught even with no training. A comparison of the level

of training and technical assistance provided in the demonstration project described in this chapter with the levels provided in original studies supporting each component suggests that the service providers in the original research studies received far more training and technical assistance than the teachers in the case study described here. Guerra and Slaby (1990) reported that graduate students delivered their violence prevention curriculum after receiving extensive formal training (16 hours) provided by the program developer. The students received ongoing (30 minutes per week) face-to-face technical assistance from the developer during the implementation of the program. Caplan et al. (1992) reported master's-level health educators from a university-based community agency cotaught their SPS curriculum with classroom teachers after receiving training (six 2-hour sessions) from the developer. Weekly on-site consultation was also provided by the developers. Weissberg and Caplan (1994) reported that classroom teachers implemented the program with assistance from undergraduate aides and that extensive training (ten 90-minute workshops) was provided by the program developers. On-site consultation and coaching was also provided by the research staff.

Botvin et al. (1983), however, reported positive program effects for the LST program when teachers in suburban New York schools implemented the curriculum after only a 1-day training session. But, in that study, project staff were available to consult with teachers whenever necessary, and extensive implementation-monitoring mechanisms were applied to "assure that the LST program was being properly implemented" (p. 363). It appears that when the program developers are actively involved in the implementation of the program, positive effects are often observed. Lipsey's (1992) extensive meta-analysis of prevention and treatment programs also found that programs delivered by researchers were more effective than those delivered by the typical practitioner, presumably because researchers attended more to issues of strength and integrity of program implementation.

When school-based programs are implemented under less than ideal conditions, results have not been as positive. Botvin, Batson, et al. (1989) reported considerable variation in quality of implementation across teachers in an experiment involving Black students in nine urban schools. In that study, 1 day of training was provided to implementing teachers, with no feedback on the quality

of implementation. In a study of Hispanic students in eight urban schools in the New York area, Botvin, Dusenbury, et al. (1989) reported that the amount of the LST program material covered by teachers ranged from 44% to 83%. When the experimental sample was divided into high implementation (with a mean completion rate of 78%) and low implementation (mean of 56%), positive effects of the program were found to be due only to the high-implementation group.

Botvin et al. (1990) compared the effectiveness of two different training mechanisms for teachers implementing the LST program. One involved the 1-day training session described earlier and implementation feedback to teachers. The other involved a 2-hour videotape accompanied by written instructions and curriculum materials. No feedback was provided. The quality of implementation was similar in each condition, with a mean of 67% and 68% of the material covered in each condition. The amount of material covered ranged from 27% to 97%, with only 75% of the students in either experimental condition being exposed to 60% or more of the material. The level of implementation was strongly related to the effectiveness of the program. This study suggests that even the 1-day training for teachers provided in the more intensive condition may not be sufficient to produce high-quality implementation in the absence of ongoing monitoring and consultation to improve the quality of implementation. Ongoing consultation and technical assistance appear more important than initial training in producing high-quality implementation.

It is not possible to compare directly the intensity of implementation of components in our study with the intensity levels reported in previous studies, but comparisons with implementation standards established for each component are possible. For each component, a quantitative standard was set prior to implementation. The standard for SPS, for example, was that 95% of the seventh-grade students would complete at least 80% of the course assignments. The percentage of targeted students actually achieving the standards set for each program component ranged from 0% to 67% (mean = 28%) for the 1993-94 school year, the year in which the program was implemented in its strongest form. If we adopt the 60% fidelity cut point proposed by Botvin et al. (1990), only 1 of the 11 components would be considered strong enough to expect positive outcomes.

Limited initial training, ongoing technical assistance, or both may explain the low level of implementation. The amount of initial training provided for the teacher-implementers was generally less than had been provided in prior research, although it was ample according to customary school district practice. For most components, teachers were initially trained by the component's developers. But in later years, new staff relied on the teacher's manuals and training provided by their peers who had been previously trained. The project leaders in the school had been trained by the developers and felt that additional training was not necessary. They provided training to other teachers in the school. Although inadequate initial training of the providers may be part of the explanation of the subsequent poor level of implementation, the Botvin et al. (1990) finding that the amount of training does not explain variation in program implementation and the Connell et al. (1985) demonstration that reasonable levels of implementation can be achieved without training lead us to speculate that other factors had more influence on the quality of implementation. It is more likely that lack of ongoing technical assistance and support by persons other than the project staff and the general school climate influenced the level of implementation more than the mere number of hours of training received.

Outsiders. A sacred norm among residents of the city in which the demonstration occurred is protecting their history and traditions from pressures for change from the outside. This aspect of the city's culture is documented in history books (Rosen, 1982), is the theme of many novels and films, and is obvious to visitors to the city. The reform effort of which this project was one part came about when the state department of education—an "outsider" organization—declared the cities' schools "educationally impaired" and required the school district to develop an improvement plan. The school district complied reluctantly. A new superintendent from Florida (an outsider) placed in charge of this effort a new assistant superintendent for instruction from New England (an outsider), and the authors (also outsiders) were asked to help. A major focus of the larger reform was redistribution of resources to the schools serving the most disadvantaged students, an idea that met with resistance from guardians of the status quo in the central administration and several school board members who were opposed to most public

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expenditures on the public schools. (In this city, as in many Southern cities, private schools are the norm for children of well-off citizens.) The reform came to be seen and described by many in the school system as yet another attempt to interfere with local autonomy.

This violation of the most sacred norm of local autonomy was replicated in Bradley, as long-time teachers and counselors resisted attempts by outsiders to change their practices. The literature suggests that school-based change is more likely to succeed when the school staff participate in the planning and implementation of the project—when they feel a sense of ownership and commitment to it. Although it was intended that teachers and administrators would become actively involved in running the project at the school level, the desired level of local participation was never achieved. Teachers instead experienced the program as having been imposed on them from the outside. In interviews with CSAP site visitors (CSR, Inc., 1994) one teacher expressed resentment at having to "change our teaching styles to make some outsiders look good" (p. 23). One person remarked that "this program is more about research and experimenting with cooperative learning than it is about these children" (p. 23). These views of the program were not universal among school personnel. Several veteran teachers and the counselor who managed the effort worked diligently to change the status quo in the school to incorporate the new practices. Their tireless efforts were responsible for the implementation that did occur. But their work was thwarted by those who felt no ownership for the effort, and by the absence of a strong leader.

Leadership. During the period from the inception of the project to its end, Bradley had three different principals and three different assistant principals. Bradley's initial assistant principal was the natural leader for the project. She was organized, respected, and completely knowledgeable about the proposed program, having been a member of the district-level task force. She had been the leader of an earlier successful demonstration project aimed at reducing school disorder and was skilled at generating and maintaining teacher involvement and commitment. Her strengths more than compensated for the weak leadership provided by the woman who was principal during most of the project's implementation—who was known as a strict disciplinarian but not as a strong instructional leader for the school. When the assistant principal left

just before the beginning of the project to accept a position as the principal at a different school, the prognosis for the project worsened considerably.

None of the subsequent administrators assigned to the school provided leadership for the project. Interviews conducted at the end of the last year of program implementation showed that the assistant principal lacked understanding about the theory underlying the program, and the school's new principal was described by different teachers as "inexperienced, timid, indecisive, with little follow-through" and "clueless" about the project. Similar observations were made of the person who served as principal for most of the project: She neither undermined nor supported the effort, but was "mostly oblivious" to it. Several teachers and other members of the school staff pointed to lack of administrative support for the program as an obstacle.

This lack of leadership took a toll on the project. Because the project was designed to rely heavily on regular school staff to implement most program components, the support of the principal was crucial. When the principal did not encourage staff involvement, it was not forthcoming. When no consequences resulted from nonparticipation, the status quo was reinforced.

Several key decisions about the program made by the principal seemed not to be based on concern for the effectiveness of the program. The initial-project coordinator selected by the high school principal was incapable of doing the job and had to be replaced after getting the project off to a poor start by generating ill will from many of the teachers. The Bradley principal also erred in filling the position for a full-time teacher for the ELF class—a critically important position for the project. Despite strong encouragement from the researchers and direct program staff to use the position to support a well-respected veteran teacher from the school with a real interest in teaching a social competency promotion curriculum, the principal instead placed in the position a new teacher who lacked experience and interest in dealing with troublesome adolescents.

Similarly, district-level leadership for the project diminished once the task force that had created a climate of change for the district was disbanded. In earlier projects conducted with middle schools in the school district, strong central office support was provided by the Supervisor of Middle Schools. The school board eliminated this

position just prior to the initiation of the current project. Although the project was technically monitored by the Director of Pupil Personnel Services in the central office, she was already overburdened with other responsibilities and had infrequent contact with the school or the researchers about the project.

Recall that just as the project began, the superintendent who had supported the districtwide planning was replaced for exploring avenues to raise revenue needed for the school. His replacement did not block but did nothing to support the project. He went along with a destructive board decision not to hire 12-month personnel, even with grant funds. He also made it clear that the district reform plan was "not my plan." We know of no visit by the superintendent to the project school during the 5-year period.

We suspect that these problems of weak leadership and incapable staff are common in school-based prevention efforts in troubled schools and school districts. The literature reviewed earlier on uneven distribution of human resources across schools accords with our observations made over the course of many projects and many years of attempting prevention efforts in urban schools. The workforce in large, urban school districts seems to be bimodal, with the highly skilled and committed workers counterbalanced by many unsatisfactory workers. Faculty and administrators who are energetic and capable are recruited and retained in desirable schools. Others migrate to schools with more problems.

Organizational Capacity. Stronger implementation is expected in schools whose climates support innovation. Some of the indicators of a positive climate for change include high staff morale and involvement in problem solving rather than crisis management. Schools overwhelmed with basic problems such as student misbehavior are unlikely to have the capacity to innovate effectively.

Bradley's general organizational incapacity served as a major drag on the program. Bradley operated in a continual state of crisis during the project. The school was overwhelmed by discipline problems, as evidenced by the increasing rates of discipline referrals and suspensions. Teachers reported spending most of their time on discipline problems and that instruction was of secondary importance.

A series of serious incidents occurred in the school over the course of the project. These included mayhem by faculty family

members setting themselves on fire, televised accounts of statutory rape in the school, police escorting students to class in handcuffs, and program participants dying in high-speed chases with police while joyriding. The principal was hospitalized for an extended period following a health crisis. These events impaired school spirit.

Project staff saw teacher morale decline and with it, teacher enthusiasm and support for the project. Teachers who taught the project classes reported a general lack of focus in the school. They reported having to conduct project lessons "in haste or not at all" because of interruptions and various unscheduled events. In interviews, teacher after teacher described the student population as "difficult," "challenging," "disrespectful," "rude," and "discourteous." It is not possible to determine the extent to which these unflattering perceptions of the students originated in a true shift in student characteristics or whether the perceived misbehavior resulted from inconsistency in discipline management and a general lack of guardianship at the school. School district administrators described the Bradley staff as "unable to deal with the problems."

Although we had not planned to conduct school climate surveys as part of the evaluation of the project, we asked teachers to complete a survey during the last month of school of the final year to confirm our suspicion that the climate had become less supportive of innovation during the 5-year period. As part of the larger district reform, we had administered the Effective School Battery (Gottfredson, 1984a) to all Bradley teachers during the 1989-90 school year, a year prior to the beginning of the project. The same survey was readministered in Spring 1995. Response rates for the 2 years were 78% and 85%. The 1995 survey showed the school to be average on most dimensions except those related to safety and discipline. Bradley's teachers reported a higher level of victimization experiences (in the top 10th percentile of schools in the normative sample), and their approach to dealing with students was highly authoritarian. Many teachers saw the students as "hoodlums." Also, teacher job satisfaction was low—in the 29th percentile for schools. When the 1995 scores were compared with the earlier scores, significant ($p < .05$) declines were observed in teacher reports of safety and feelings of personal security in the school, and marginally significant ($p < .10$) declines were observed in teacher morale and job satisfaction.

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Conclusion and Recommendations

One of the *Healthy People 2000* objectives is to increase the proportion of the nation's schools that provide comprehensive school health education. The report defined high-quality programs as planned, coordinated, ongoing, including multiple interventions, relying on behavioral science technology, and integrating education, skills development, and motivation on a range of health problems and issues.

By most measures, the program described in this chapter would be counted as a comprehensive school health education program. School and district administrators, if asked to describe their school health program, would certainly have reported that a comprehensive, scientifically tested, sequential program with multiple interventions including education, skills development, and resiliency-enhancement was implemented for several years. They would have reported that local administrators and teachers were involved in the planning of the program, that it was managed and implemented by school staff, that most of the staff in the school were involved with some aspect of the program, and that an enormous amount of time was devoted to the program components. In the final 2 years of the program, students were scheduled into a regular class (for approximately 60 hours of instruction spread over 12 weeks) to receive the program components. An evaluation of national school health programs (Connell et al., 1985) concluded that stable effects on health risk attitudes and behaviors are established at about 40-50 classroom hours of instruction.

Classroom contact hours and educator reports of the quality of the program are not sufficiently sensitive measures of the quality of school health education programs. The program described in the case study in this chapter appeared to be of high quality and consumed large amounts of student time. But lessons were dropped and "reinvented" in ways that reduced the effectiveness of the program, and student absenteeism and nonparticipation further diminished the program's potential to meet its objectives. A midcourse review of progress toward the national health promotion objectives (DHHS, 1995) mentions the inherent difficulties in identifying and establishing meaningful ways to measure the qualitative dimension implied in many of the services and protec-

tion objectives in *Healthy People 2000*. Counting the mere number of services provided is likely to be misleading. More programs and services are bound to be located in the most troubled areas, but their effectiveness is likely to be diminished by organizational incapacity. Meaningful measures of quality school health education programs must capture information on the strength and fidelity of these programs. Measures such as those developed by Hall and Loucks (1978) and modified for use in a large-scale study of the fidelity of public sector social programs (Blakely et al., 1987) are required. Without such measures to assess the fidelity and extent of modification of the program components, policymakers are likely to be misled by statistics showing increasing numbers of programs.

How can the strength and integrity of school-based prevention programs be improved? Although research on the "technology" of prevention has advanced in the past decade, we know little about the conditions necessary to apply these advances under real-world conditions. The literature on school innovation reviewed earlier hardly provides a theory of implementation, but it at least provides hints about the organizational barriers to strong implementation. We need more precise information about the causal factors that determine level of implementation, and we need to develop a theory to guide attempts to strengthen intervention practices. We need valid assessment instruments to test schools' readiness for change, and differentiated organization development and technical assistance strategies for providing the necessary support for schools at different stages of readiness. Some schools need substantial capacity-building before they can be expected to innovate successfully. For some schools, it will be necessary to shore up the organization to support change and establish problem-solving processes before new practices are attempted. This might be accomplished through an organization development process, essential features of which are the identification and monitoring of clear implementation standards and open analysis and resolution of obstacles that prevent the standards from being met. Most important, school staff must learn how to do this on their own, and they must be provided an environment that supports this kind of problem-solving approach. While mere staff training may be translated into beneficial change in some schools, it will be a drop in the bucket, or even a hindrance or perceived as a waste of precious time, in others. This

reality must be confronted if we are to achieve change in those places most in need of change.

Note

1. The name of the school has been changed to protect its confidentiality.

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